

**Translation**

**PATENT COOPERATION TREATY**

PCT/JP2003/013883



**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>HA021030</b>	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416	
International application No. <b>PCT/JP2003/013883</b>	International filing date (day/month/year) <b>29 October 2003 (29.10.2003)</b>	Priority date (day/month/year) <b>30 October 2002 (30.10.2002)</b>
International Patent Classification (IPC) or national classification and IPC <b>C04B 16/06, 28/02, D06M 10/02, 11/07, E04G 21/02</b>		
Applicant <b>HAGIHARA INDUSTRIES INC.</b>		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>4</u> sheets, as follows:</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>	
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>	

Date of submission of the demand <b>19 April 2004 (19.04.2004)</b>	Date of completion of this report <b>07 January 2005 (07.01.2005)</b>
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2003/013883

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☐ The international application as originally filed/furnished
- ☒ the description:
- pages \_\_\_\_\_ 1-19 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- pages \_\_\_\_\_ 5 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_, as amended (together with any statement) under Article 19
- pages\* \_\_\_\_\_ 1, 3, 4, 6, 7 \_\_\_\_\_ received by this Authority on \_\_\_\_\_ 23 July 2004 (23.07.2004)
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:
- pages \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☒ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☒ the claims, Nos. \_\_\_\_\_ 2 \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☒ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☒ the description, pages \_\_\_\_\_ 18, 18/1 \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/JP 03/13883

**Supplemental Box**  
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: I

The specific experimental conditions in comparative examples 4 to 6 are not disclosed in the description of the present application as filed.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/JP 03/13883**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims	1, 3-7	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1, 3-7	NO
Industrial applicability (IA)	Claims	1, 3-7	YES
	Claims		NO

**2. Citations and explanations**

- Document 1: JP 11-116297 A (Hagihara Industries Inc.), 27 April 1999, claims and paragraph [0022]
- Document 2: JP 2000-264708 A (Toyobo Co., Ltd.), 26 September 2000, claims 1, 2 and 4, and paragraphs [0003], [0008] and [0026]
- Document 3: JP 2001-58858 A (Daiwabo Co., Ltd.), 06 March 2001, claims 3 and 4, and paragraphs [0016] and [0021] to [0022]
- Document 4: JP 2002-227074 A (Daiwabo Co., Ltd.), 14 August 2002, claim 3, and paragraphs [0003] and [0018] to [0019]
- Document 5: EP 670291 A2 (Atomic Energy Corp. of South Africa, Ltd.), 06 September 1995, claims 1, 3, 6, 8 and 9, and page 2, lines 35 to 44, & JP 8-34649 A, claims 1, 3, 6, 8 and 9, and paragraph [0011]

The inventions that are set forth in claims 1 and 3 to 7 do not involve an inventive step in the light of documents 1 to 5 cited in the international search report.

Document 1 discloses polypropylene fibers with a single yarn size of 200-10,000dr, which are configured so as to exhibit an average compression ratio between 2/1 and 7/1 and to have a shape that comprises projections and

recesses. In addition, document 1 discloses a feature wherein said fibers are used in sprayed concrete (claim 2), and indicates that said fibers are subjected to treatments such as a surface activation treatment or a cross linking treatment which are implemented by means of a corona discharge treatment or the like (paragraph [0022]).

Document 1 does not make any disclosures pertaining to specific experimental conditions or to the wetting index of the surfaces of the fibers after treatment. However, features wherein polyolefin-based fibers for reinforcing cement are subjected to a surface modification treatment such as a corona discharge treatment or a fluorination treatment in order to increase the hydrophilicity of the fibers, to improve the affinity and the adhesion characteristics of the fibers in relation to cement, or to improve the dispersion characteristics of the fibers within cement are well known, as disclosed in documents 2 to 5. Furthermore, a person skilled in the art would know that the abovementioned characteristics of the fibers would affect the flexural characteristics of a hardened cement object to which the fibers in question have been added.

As a result, there is not considered to be any significant difficulty in using the wetting index, which is an indicator of hydrophilicity, as the indicator for the surface activation treatment that is disclosed in document 1; nor is there considered to be any significant difficulty in establishing a range therefor.

In addition, the treatment conditions for the corona discharge treatment are disclosed in document 3, and the treatment conditions for the fluoridation treatment are disclosed in documents 4 and 5.